226/242
Docket

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Cheng et al.

Serial No.: 08/900,559

Filed: 07/25/97

For: METHOD OF USE OF ONE STEP IMMUNOCHROMATOGRAPHIC DEVICE FOR STREPTOCOCCUS A ANTIGEN

Group Art Unit: 1641

Examiner: Carol A. Spiegel

May 10, 1999

DECLARATION OF RICHARD H. SCHWARTZ, M.D.

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

1. I received an M.D. from Georgetown University in 1965, and am practicing medicine with the Vienna Pediatric Associates in Vienna, Virginia. In the past 12 years I have evaluated several rapid diagnostic clinical tests to detect group A Streptococci. A copy of my CV is attached to this declaration as Exhibit 1.

CERTIFICATE OF MAILING
(37 C.F.R. §1.10)

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as 'Express Mail Post Office To Addressee' in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

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2. I have conducted comparison tests of the OSOM™ Strep A Test and the Quidel QuickVue™ In-Line Strep A Test, and the results have been published in The Pediatric Infectious Disease Journal, Vol. 16, No. 11 at 1099-1100, November 1997. A copy of this article is attached to this declaration as Exhibit 2.

3. I have reviewed the pending claims in U.S. Application Ser. No. 08/900,559 and it is my understanding that claim 10 is directed to a method for determining the presence or absence of Strep A in a sample using a separate assay chamber and immunochromatographic device. In the method of claim 10, the sample is extracted with an extraction solution in the assay chamber. The immunochromatographic device is then inserted into the assay chamber where it contacts the liquid extract, and the presence of the Strep A antigen is detected. It is my understanding that the OSOM™ Strep A test exemplifies such a method.

4. The OSOM™ Strep A immunodiagnostic test strips are not contained in a bulky plastic or cardboard housing, and are therefore compact enough to be directly inserted into a sample chamber small enough to permit efficient sample extraction. The OSOM™ Strep A test contains an immunochromatographic test strip and a separate assay chamber. When the OSOM™ Strep A test is performed, separation of the assay chamber from the immunochromatographic test strip permits extraction of the sample to proceed until insertion of the immunochromatographic test strip into the extracted sample. Because the time from the start of the sample extraction to initiation of the lateral flow immunoassay (by insertion of the device into the sample chamber) can be

controlled, there is greater control over mixing of the sample with the reagents, and the length and efficiency of extraction. This results in greater sensitivity of the assay, compared to assays in which sample mixing, and the length and efficiency of extraction cannot be controlled.

5. In contrast to the OSOM™ Strep A test strip, the QuickVue™ device contains a bulky housing for a lateral flow immunochromatographic test strip for the detection of Strep A. This housing contains a sample extraction chamber in flow communication with the test strip. The figure on the first page of U.S. Patent No. 5,415,994 by Imrich et al. appears to be a representation of the QuickVue™ In-Line Strep A Test device. The QuickVue™ In-Line Strep A Test device exemplifies the device to which claim 1 of U.S. Patent No. 5,415,994 is drawn—that is, a device having an extraction chamber for extracting the analyte from the sample, where the extraction chamber is positioned over the sample receiving zone of an immunochromatographic test strip.

6. More specifically, the immunochromatographic test strip in the QuickVue™ In-Line Strep A Test is housed in a molded plastic housing having an assay chamber which is in flow contact with the immunochromatographic test strip. The assay chamber has a bowl portion and a cylindrical portion designed to receive a specially proportioned swab. When in use, a swab containing a sample is inserted into the cylindrical portion of the assay chamber, and the test is initiated by putting drops of freshly mixed extraction solution into the chamber, where it contacts and is mixed with the contents of

the swab. The assay chamber is in flow contact with the sample receiving zone of the immunochromatographic test strip, and flow from the sample extraction chamber onto the test strip begins as soon as the extraction reagents are added to the sample in the sample chamber and the extraction solution flows past the swab. In strep A tests using the QuickVue™ In-Line Strep A Test, samples cannot be mixed as vigorously with reagents as in a separate assay chamber, and there is less time for extraction prior to initiation of the assay. This results in a lower sensitivity of the immunodiagnostic test.

7. The results set forth in Exhibit 2 show that the OSOM™ Strep A test had a greater sensitivity than the QuickVue™ Strep A test. The OSOM™ Strep A test had an overall sensitivity of 95%, while the QuickVue™ Strep A test had an overall sensitivity of 87%. Exhibit 2 at 1100. Both tests had a sensitivity of 100% for the detection of 3+ and 4+ Streptococcus growth (as demonstrated by growth of colonies on agar plates); however, while the OSOM™ Strep A test was 83% sensitive for 1+ cultures, and 86% for 2+ cultures, the QuickVue™ test was only 33% sensitive for 1+ cultures, and 72% sensitive for 2+ cultures. Exhibit 2 at 1100.

8. In performing the tests to obtain the results set forth in Exhibit 2, the tests were performed as set forth in the manufacturer's directional inserts. In the OSOM™ Strep A test 3 drops of 2M sodium nitrite (pink) and 3 drops of 0.3 M acetic acid were added to the assay chamber (a test tube), and the extraction solution turned yellow. The swab containing the sample was then immediately inserted into the assay chamber. The swab was rotated against the side of the tube at least ten times, and the samples

were left standing for one minute. Liquid was expressed from the swab by pressing the swab against the side of the assay chamber, and the swab was discarded. An OSOM™ Strep A Test Stick was then placed into the extracted sample, and the results were read at 5 minutes.

9. Other immunoassays available prior to the OSOM™ Strep A Test required the use of immunodiagnostic test strips in bulky housings (such as the the QuickVue™ test and the Binax NOW™ Strep A test) and/or required further manipulation, e.g., transfer, of the extracted sample to the immunodiagnostic test strip following sample extraction. The need for further manipulation of the extracted sample introduced additional sources of error into the tests, requiring that the tests be performed by more qualified licensed personnel.

10. One-step immunoassays available prior to the OSOM™ Strep A Test which did not require further manipulation of the extracted sample made use of devices with unwieldy plastic housings having a built-in sample chamber, and which were too bulky to fit within a sample chamber small enough to obtain efficient extraction. One of ordinary skill in the art would therefore not have been motivated to initiate an assay which did not require further manipulation of the extracted sample by insertion of the immunodiagnostic device into the sample chamber.

I hereby certify that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Dated: February 26, 1999

Richard H. Schwartz, M.D.